

Serial No.: 10/027,927

Filing Date: 12/22/2001

Attorney Docket No. 100.271US01RCE

Title: ESTABLISHMENT OF AN END TO END VIRTUAL CONNECTION

REMARKS

Applicant has reviewed the Final Office Action mailed on March 23, 2006 as well as the art cited. Claims 1-18 are pending in this application. Claim 11 has been amended to better clarify its patentable subject matter. New claims 15-18 have been added to claim material disclosed in the specification. No new matter has been added by this amendment.

Summary of Examiner Interview

The Applicants' representatives, David Fogg (Registration Number 35,138) and Joseph Kendrick (Registration Number 53,109) thank Examiner Elallam for the opportunity to discuss aspects of this case in a personal interview on May 9, 2006.

Claim 5 was specifically discussed with respect to the Examiner's rejection of claim 5 under 35 U.S.C. §103(a) as being unpatentable over admitted prior art (APA) in view of Bosloy. During the interview, Applicants' representatives asserted that APA and Bosloy, either alone or in combination failed to discuss the concept of transmitting a data packet embedded with PVC connection information across a static network for the purpose of establishing a PVC between a switch of the static network and a remote node. Accordingly, the reference either alone or in combination failed to teach all of the limitations of claim 5. Further, Applicants' representatives asserted that the Examiner had failed to provide a sufficient motivation to combine the APA and Bosloy references. Examiner agreed to take these argument into further consideration.

Applicants believe that the substance and scope of the personal interview of May 9, 2006 is accurately captured in the summary above and the arguments below.

Rejections Under 35 U.S.C. § 112

Claims 1-4, 10, 11-14 were rejected under 35 USC § 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

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Regarding claims 1 and 11, the Examiner refers to paragraph [18] and asserts that “it is not clear how the process ‘sets up the permanent virtual circuit between switch 108 and remote node 106 based on the embedded information.’” Further, Examiner asserts that because claims 2-4 and 12-14 depend on claims 1 and 11, respectively, they are subject to the same rejections. Respectfully, the Application traverses these rejections.

Independent claims 1 and 11 are not lacking under 35 USC § 112, first paragraph because the subject matter of claims 1 and 11 are described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. In the remarks below, the Applicant demonstrates that the specification provides sufficient information to enable one skilled in the art to “set[] up the permanent virtual circuit between switch 108 and remote node 106 based on the embedded information” as provided in claims 1 and 11.

As taught by Applicant’s specification, network 102 is a static network that makes up part of the connection between customer premises equipment 104 and remote node 106. See Fig. 1. The specification further provides that “end-to-end communication is established over a static connection through network 102” See par. [13] In one embodiment, packets transmitted through network 102 are “sent over a static connection under the IISP protocol.” See par. [18] lines 11-12. This means that the static connection that carries the packets was established using the IISP protocol.

Network 102 is coupled to communicate with customer premises equipment 104 via access equipment 116. See Fig. 1. “Access equipment 116 includes at least one channel card 118 that provides connection over a telephone line to customer premises equipment, e.g., customer premises equipment 104.” See par. [16] lines 2-4. A permanent virtual connection (PVC) is established over that telephone line using whatever service is “implemented on the associated customer premises equipment.” See par. [16] lines 4-5; par. [18] lines 3-5. As would be appreciated by one of skill in the art, there are several means known to those of ordinary skill in the art for creating a PVC between customer premises equipment 104 and access equipment

116 over a telephone line, such a ADSL, HDSL, G.SHDL, and the like. See par. [16] lines 5-9. Access equipment 116 is further coupled to network 102 via a line card 120 that “provides a connection to data network 102 for access equipment 116.” See par. [17] lines 1-3. In one embodiment, “[l]ine card 120 supports at least one high capacity communication protocol, e.g. DS-3, OC-3 or the like.” Thus, the Applicant’s specification explains how access equipment 116 provides the communicative continuity between customer premises equipment 104 and network 102.

In order to complete the link between customer premises equipment 104 and remote node 106, network 102 includes switch 108. See Fig. 1. Switch 108 completes the link by establishing a PVC between switch 108 and remote node 106. See par. [18] lines 12-13. To establish the PVC between switch 108 and remote node 106, the switch needs to obtain information necessary for establishing a PVC, such as “slot, port, VPI and VCI” for example. The problem with prior art networks, which is solved by embodiments of the present application, is how to create an end-to-end link which is partly dynamic (PVC between switch 108 and remote node 106) and partly static (network 102). This problem exists because a static link is set up ahead of time in network 102 and the end-to-end link is completed by a dynamic PVC only when communication is needed between CPE 104 and remote node 106. See par. [06] lines 9-11.

Embodiments of the present invention provide systems and methods for providing PCV connection information to switch 108 over the static connection of network 102 by embedding the PVC information into a data packet that can be communicated over the static connection of network 102. See par. [13] lines 4-6. In one embodiment, the data packet is an ATM cell. Id. Access equipment 116 embeds the information necessary for establishing a PVC, such as “slot, port, VPI and VCI” for example, into the data packet and communicates that packet over network 102 to switch 108. In one embodiment, the PVC information is embedded within the destination address section of the data packet. See par. [18] lines 7-9. When switch 108 receives that data packet, it extracts the embedded PVC information, thus obtaining the slot, port, VPI and VCI information that enables switch 108 to create a PVC with remote node 106. See par. [18] lines

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12-14. Thus, the Applicant's specification explains how access equipment 116 communicates the PVC information to switch 108 over the static connection of network 102. As would be appreciated by one of skill in the art, once switch 108 obtains PVC information such as slot, port, VPI and VCI, there are several means known to those of ordinary skill in the art for creating a PVC between switch 108 and remote node 106.

Applying the above sections of the specification to Applicants claim 1, demonstrates that the subject matter of claim 1 is described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Claim 1 teaches a method comprising:

“establishing a permanent virtual circuit between customer premises equipment and a digital subscriber line access multiplexer;

embedding information for a permanent virtual connection between a switch and a remote node in a packet transmitted over a static connection in a network; and

establishing a permanent virtual circuit between the switch and the remote node based on the embedded information.”

Establishing a permanent virtual circuit between customer premises equipment and a digital subscriber line access multiplexer is enabled because the specification teaches the access equipment 116 that provides connection over a telephone line to customer premises equipment (See par. [16] lines 2-4) and that a permanent virtual connection (PVC) is established over that telephone line using whatever service is “implemented on the associated customer premises equipment.” See par. [16] lines 4-5; par. [18] lines 3-5. Examples of several means known to those of ordinary skill in the art for creating the PVC, such as ADSL, HDSL, G.SHDSL, and the like, are described by in the specification. See par. [16] lines 5-9.

Embedding information for a permanent virtual connection between a switch and a remote node in a packet transmitted over a static connection in a network is enabled because the specification teaches providing PVC connection information to switch 108

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over the static connection of network 102 by embedding the PVC information into a data packet that can be communicated over the static connection of network 102. See par. [13] lines 4-6. Access equipment 116 embeds the information necessary for establishing a PVC between switch 108 and a remote node 106 (such as “slot, port, VPI and VCI” for example) into the data packet and communicates that packet over network 102 to switch 108. In one embodiment, the PVC information is embedded within the destination address section of the data packet. See par. [18] lines 7-9.

Finally, establishing a permanent virtual circuit between the switch and the remote node based on the embedded information is enabled because the specification teaches delivering the data packet containing embedded PVC information to switch 108 (this providing switch 108 with slot, port, VPI and VCI information, for example) that enables switch 108 to create a PVC with remote node 106. See par. [18] lines 12-14. As would be appreciated by one of skill in the art, once switch 108 obtains PVC information such as slot, port, VPI and VCI, there are several means known to those of ordinary skill in the art for creating a PVC between switch 108 and remote node 106.

Because the subject matter of claim 1 is described in the specification in such a way as to enable one skilled in the art to make and/or use the invention, applicant respectfully requests withdrawal of this rejection.

Applying the above sections of the specification to Applicants claim 11, similarly demonstrates that the subject matter of claim 11 is described in the specification in such a way as to enable one skilled in the art to make and/or use the invention. Further, claim 11 has been amended to better clarify its patentable subject matter. The amended claim 11 teaches a system comprising:

“a data network;” (See Figure 1, data network 102)

“a switch of the data network;” (See Figure 1, switch 108)

“a digital subscriber line access multiplexer, adapted to be coupled to the data network and the switch of the data network, comprising:” (See Figure 1, access equipment 116)

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“at least one channel card coupled to at least one customer premises equipment over a communication line;” (See Figure 1, channel card 118)

“at least one line card, adapted to be coupled to a data network, the line card adapted to provide communication between the at least one customer premises equipment and a remote node coupled to the data network;” (See Figure 1, line card 120) and

“wherein a permanent virtual connection exists between the remote node and the switch of the data network based on information embedded in a destination address of a packet transmitted over a static connection between the switch of the data network and the digital subscriber line access multiplexer.”

The PCV between the remote node and the switch of the data network is enabled because the specification teaches delivering a data packet containing embedded PVC information to switch 108 (thus providing switch 108 with slot, port, VPI and VCI information, for example) that enables switch 108 to create a PVC with remote node 106. See par. [18] lines 12-14. As would be appreciated by one of skill in the art, once switch 108 obtains PVC information such as slot, port, VPI and VCI, there are several means known to those of ordinary skill in the art for creating a PVC between switch 108 and remote node 106.

Further, embedding the PVC information in a packet transmitted over a static connection in a network is enabled because the specification teaches providing PCV connection information to switch 108 over the static connection of network 102 by embedding the PVC information into a data packet that can be communicated over the static connection of network 102. See par. [13] lines 4-6. Access equipment 116 embeds the information necessary for establishing a PVC between switch 108 and a remote node 106 (such as “slot, port, VPI and VCI” for example) into the data packet and communicates that packet over network 102 to switch 108. In one embodiment, the PVC information is embedded within the destination address section of the data packet. See par. [18] lines 7-9.

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Because the subject matter of claim 11, as amended, is described in the specification in such a way as to enable one skilled in the art to make and/or use the invention, applicant respectfully requests withdrawal of this rejection.

Rejections Under 35 U.S.C. § 103

Claims 1-14 were rejected under 35 USC § 103(a) as being unpatentable over Admitted Prior Art in view of Bosloy et al; (U.S. Patent No. 6,714,544). Applicant traverses these rejections.

When applying 35 U.S.C. §103, the claimed invention must be considered as a whole; the references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination; the references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention and a reasonable expectation of success is the standard with which obviousness is determined. *Hodosh v. Block Drug Co., Inc.*, 786 F.2d 1136, 1143 n.5, 229 USPQ 182, 187 n.5 (Fed. Cir. 1986).

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP 2143

Regarding claim 1, the Examiner admits that the “prior art doesn’t specify embedding information for the permanent virtual connection between the switch and the ISP in a packet transmitted over the static connection in a network” for establishing a PVC between the switch and the ISP. The Examiner then refers to Bosloy col. 5 lines 40-55 which provides a network management entity that “sends a management command over a management link to [a] source

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node communicating the details of the source endpoint (such as slot, port, VPI, VCI for an ATM source endpoint for instance)... The management command sent to the node to request the creation of an S-PVC may be done via a standard protocol such as SNMP or CMIP, or via a proprietary protocol.” Examiner asserts that “[i]t would have been obvious to a person of ordinary person in the art to send a command for establishing the permanent virtual circuit as taught by Bosloy in the system of APA for establishing the APA connection between the switch and the ISP... The motivation would be the recognition of using available methods in establishing end-to-end virtual connection in the system of prior art.”

Applicant respectfully asserts that the Admitted Prior Art and Bosloy, alone or in combination, fail to teach or suggest “embedding information for a permanent virtual connection between a switch and a remote node in a packet transmitted over a static connection in a network” and therefore fails to establish a *prima facie* case of obviousness. Protocols for static networks (such as IISP, for example) use “a static routing protocol that requires manual configuration of the routes through the network.” See Application par. [06]. Protocols such as IISP “[do] not provide a mechanism for communicating the information necessary to establish [a] PVC” because routing on the static network is manually configured. The “management command” discussed in Bosloy does not cure the APA’s defect. Because, Bosloy only discusses using management commands over a PNNI compliant network, Bosloy does not provide for “embedding of information for the permanent virtual connection between the switch and the ISP in a packet transmitted over [a] static connection in a network” which Examiner admits is also not provided by the APA.

Further, because Bosloy addresses the creation of PVCs over PNNI networks, rather than static networks, there is no motivation for one of ordinary skill in the art to combine the APA and Bosloy. Respectfully, the Examiner’s suggested motivation of “recognition of using available methods in establishing end-to-end virtual connection in the system of prior art” is flawed because the Applicant’s specification teaches away from incorporating PNNI protocol features into a static network as “the PNNI protocol is complicated and expensive and time consuming to

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implement.” The Therefore, since the disclosure of Bosloy teaches away from the APA, the Examiner’s stated motivation fails to provide a reason to combine the references.

Accordingly, it is respectfully requested that the rejection of claim 1 be withdrawn. Claims 2-4 ultimately depend from claim 1. Accordingly, it is respectfully requested that the rejection of these claims be withdrawn for at least the same reasons as claim 1.

Regarding claims 5 and 10, the Examiner admits that the “prior art doesn’t specify information ‘for’ the permanent virtual connection between the switch and the ISP is embedded in a packet transmitted over the static connection between a line card and the switch, as in claim 5” and “establishing the permanent virtual circuit between the switch and the ISP based on at least slot, port, VPI and VCI information to complete the end-to end connection as in claim 10.” The Examiner then refers to Bosloy col. 5 lines 40-55 which provides a network management entity that “sends a management command over a management link to [a] source node communicating the details of the source endpoint (such as slot, port, VPI, VCI for an ATM source endpoint for instance)... The management command sent to the node to request the creation of an S-PVC may be done via a standard protocol such as SNMP or CMIP, or via a proprietary protocol.” Examiner asserts that “[i]t would have been obvious to a person of ordinary person in the art to reverse the sending of command signaling for establishing the permanent virtual circuit of that taught by Bosloy in the system of APA for establishing the APA connection between the switch and the ISP... The motivation would be the recognition of using available methods in establishing end-to-end virtual connection in the APA system.”

Applicant respectfully asserts that the Admitted Prior Art and Bosloy, alone or in combination, fail to teach or suggest a digital subscriber line access multiplexer “wherein information for a permanent virtual connection between the remote node and a switch of the data network is embedded in a packet transmitted over a static connection in the data network between the at least one line card and the switch” as provided in claim 5. Applicant also respectfully asserts that the Admitted Prior Art and Bosloy, alone or in combination, fail to teach or suggest a method comprising “embedding at least slot, port, VPI and VCI information for a

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permanent virtual connection between a switch and a remote node in a packet” and “transmitting the packet over a static connection in a data network between the digital subscriber line access multiplexer and the switch” as provided in claim 10. For these reasons, the Examiner therefore fails to establish a *prima facie* case of obviousness for claims 5 and 10.

Protocols for static networks (such as IISP, for example) use “a static routing protocol that requires manual configuration of the routes through the network.” See Application par. [06]. Protocols such as IISP “[do] not provide a mechanism for communicating the information necessary to establish [a] PVC” because routing on the static network is manually configured. The “management command” discussed in Bosloy does not cure the APA’s defect. Because, Bosloy only discusses using management commands over a PNNI compliant network, Bosloy does not provide for “embedding information for the permanent virtual connection between the switch and the ISP in a packet transmitted over [a] static connection in a network” which Examiner admits is also not provided by the APA.

Further, because Bosloy addresses the creation of PVCs over PNNI networks, rather than static networks, there is no motivation for one of ordinary skill in the art to combine the APA and Bosloy. Respectfully, the Examiner’s suggested motivation of “recognition of using available methods in establishing end-to-end virtual connection in the system of prior art” is flawed because the Applicant’s specification teaches away from incorporating PNNI protocol features into a static network as “the PNNI protocol is complicated and expensive and time consuming to implement.” Thus, there is no suggestion or motivation from the APA to incorporate PNNI protocol features discussed in Bosloy. Additionally, there is no suggestion in Bosloy that management commands could be used to carry PVC information over static networks. Therefore, since the disclosure of Bosloy teaches away from the APA, the Examiner’s stated motivation fails to provide a reason to combine the references.

Accordingly, it is respectfully requested that the rejection of claim 5 be withdrawn. Claims 6-9 ultimately depend from claim 5. Accordingly, it is respectfully requested that the rejection of these claims be withdrawn for at least the same reasons as claim 5.

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Regarding claims 11-14, the Examiner asserts that claims 11-14 have limitations of rejected claims 6 and 8, thus they are subject to similar rejections.

The currently amended claim 11 provides a communications system, “wherein a permanent virtual connection exists between the remote node and the switch of the data network based on information embedded in a destination address of a packet transmitted over a static connection between the switch of the data network and the digital subscriber line access multiplexer.” For the reasons discussed with respect to claims 1 and 5, Applicant respectfully asserts that the Admitted Prior Art and Bosloy, alone or in combination, fail to teach “a permanent virtual connection exists between the remote node and the switch of the data network based on information embedded in a destination address of a packet transmitted over a static connection” and therefore the Examiner therefore fails to establish a *prima facie* case of obviousness for claims 11.

Protocols for static networks (such as IISP, for example) use “a static routing protocol that requires manual configuration of the routes through the network.” See Application par. [06]. Protocols such as IISP “[do] not provide a mechanism for communicating the information necessary to establish [a] PVC” because routing on the static network is manually configured. The “management command” discussed in Bosloy does not cure the APA’s defect. Because, Bosloy only discusses using management commands over a PNNI compliant network, Bosloy does not provide for embedding of information for the permanent virtual connection between the switch and the ISP in a packet transmitted over a static connection in a network which Examiner admits is also not provided by the APA.

Further, because Bosloy addresses the creation of PVCs over PNNI networks, rather than static networks, there is no motivation for one of ordinary skill in the art to combine the APA and Bosloy. Respectfully, the Examiner’s suggested motivation of “recognition of using available methods in establishing end-to-end virtual connection in the system of prior art” is flawed because the Applicant’s specification teaches away from incorporating PNNI protocol features into a static network as “the PNNI protocol is complicated and expensive and time consuming to implement.” Thus, there is no suggestion or motivation from the APA to incorporate PNNI

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protocol features discussed in Bosloy. Additionally, there is no suggestion in Bosloy that management commands could be used to carry PVC information over static networks. Therefore, since the disclosure of Bosloy teaches away from the APA, the Examiner's stated motivation fails to provide a reason to combine the references.

Accordingly, it is respectfully requested that the rejection of claim 11 be withdrawn. Claims 12-14 ultimately depend from claim 11. Accordingly, it is respectfully requested that the rejection of these claims be withdrawn for at least the same reasons as claim 11.

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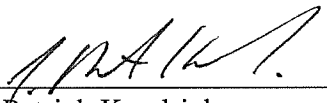
CONCLUSION

Applicant respectfully submits that claims 1-14 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at (612) 455-1688.

Respectfully submitted,

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